

## LISTING OF CLAIMS

1-123. (Cancelled)

124. (Currently Amended)

A method of producing multiple embryos ~~from a~~ from multiple female bovine ~~mammal~~ mammals comprising:

- a. creating superovulation in said multiple female bovine ~~mammal~~ mammals to create at least two eggs in each of said female bovine mammals comprising the step of using an ovulatory pharmaceutical to cause multiple eggs to be produced in each of said female bovine mammals comprising the steps of:
  - i) injecting a dosage of follicle stimulating hormone in each of said female bovine mammals a plurality of times a day;
  - ii) administering said dosage of follicle stimulating hormone with prostaglandin F-2-alpha;  
and wherein said step of injecting said dosage of follicle stimulating hormone in each of said female bovine mammals a plurality of times a day comprises injecting said follicle stimulating hormone in approximately half day increments at a dosage level of 6, 6, 4, 4, 2, 2, 2, and 2 mg between days 9 and 12 inclusive of the estrus cycle and wherein administering said dosage of follicle stimulating hormone with prostaglandin F-2-alpha comprises supplementing 25 and 12.5 mg of prostaglandin F-2-alpha on the sixth and seventh dosages, respectively, of said follicle stimulating hormone;
- b. collecting sperm cells from at least one male bovine mammal;
- c. staining said collected sperm cells with Hoechst 33342;
- d. sorting said stained sperm cells with a flow cytometer at a rate of about 800 live sperm of each sex per second to yield sperm cells of a desired sex;

- c. concentrating said sperm cells of a desired sex to a concentration of about  $3.36 \times 10^6$  sperm per milliliter;
- b. establishing an insemination sample
- f. establishing multiple insemination samples, each having a volume of about 184 microliters, and each having a number of sperm cells less than about one half the number of sperm cells of a typical unsorted insemination dosage but at least about 619,000 sperm cells about 618,240 of said sperm cells of a desired sex;
- e. inserting
- g. inserting at least a portion of said insemination sample having a number of sperm cells less than about one half the number of sperm cells of a typical unsorted insemination dosage but at least about 619,000 sperm cells into a uterus of said female bovine mammal after onset of estrus one said insemination sample into each said female bovine mammal, half the dose into each uterine horn of said female bovine mammal, 20 to 24 hours post-onset of estrus for said female bovine mammal;
- d. fertilizing
- h. fertilizing a plurality of said eggs at success levels selected from the group consisting of at least 35%, at least 41%, at least 50%, and at least 90% of a typical unsorted insemination dosage in each of up to 75% of said multiple female bovine mammals;
- e. producing
- i. producing at least two embryos from fertilizing said plurality of said eggs in said female bovine mammal of a desired sex from each of said female bovine mammals in which a plurality of said eggs were fertilized.

125-132. (Cancelled)

133. (Currently Amended)

A method of producing multiple embryos ~~from a~~ from multiple female bovine ~~mammal~~ mammals as described in claim 124 and further comprising the step of

separating sperm cells based on the amount of nuclear DNA each said sperm cell contains.

134-135. (Cancelled)

136. (Currently Amended)

A method of producing multiple embryos ~~from a~~ from multiple female bovine ~~mammal~~ mammals as described in ~~claim 135~~ claim 124, further comprising the step of allowing at least one said embryo to develop into an animal of a desired sex.

137-138. (Cancelled)

139. (Currently Amended)

A method of producing multiple embryos ~~from a~~ from multiple female bovine ~~mammal~~ mammals as described in ~~claim 136~~ claim 124, further comprising chemically coordinating a sheath fluid to create a sheath fluid environment for said cells which is coordinated with both a pre-sort and a post-sort cell fluid environment ~~comprising establishing a sheath fluid which contains about 2.9% sodium citrate.~~

140. (Currently Amended)

A method of producing multiple embryos ~~from a~~ from multiple female bovine ~~mammal~~ mammals as described in claim 139, wherein chemically coordinating a sheath fluid to create a sheath fluid environment for said cells which is coordinated with both a pre-sort and a post-sort cell fluid environment comprises establishing a sheath fluid which contains ~~a hepes-buffered medium~~ citrate.

141. (Currently Amended)

A method of producing multiple embryos ~~from a~~ from multiple female bovine ~~mammal~~ mammals as described in ~~claim 140~~ claim 124, further comprising

collecting ~~cells having the desired characteristic~~ said sperm cells of a desired sex  
and cushioning ~~said cells~~ said sperm cells of a desired sex from impact with a  
collection container which has a wide opening.

142-143.(Cancelled)